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| 10/582,453                      | 06/14/2007  | Richard William Eve  | 5724T-000001/US/NP  | 2092             |
| 27572                           | 7590        | 06/12/2008           |                     |                  |
| HARNES, DICKEY & PIERCE, P.L.C. |             |                      | EXAMINER            |                  |
| P.O. BOX 828                    |             |                      | ZIMMERMANN, JOHN P  |                  |
| BLOOMFIELD HILLS, MI 48303      |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/582,453

**Applicant(s)**

EVE, RICHARD WILLIAM

**Examiner**

John P. Zimmermann

**Art Unit**

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6-17 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-17 and 21-24 is/are rejected.
- 7) ☐ Claim(s) 22 and 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12JUN06; 29AUG06; 27JUN07
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 29 August 2006 is in compliance with the provisions of 37 CFR 1.97. However, the patent documents listed are both previously disclosed documents. In an effort to prevent duplicate entries in the record, the Examiner, having considered the IDS submitted 12 June 2006, has lined through the repeat disclosed documents. No further action is required.

### ***Claim Objections***

2. **Claim 22** is objected to because of the following informalities: Line 2 appears to contain a typographical error, the term "substantially" is read to mean substantially. Appropriate correction is required.
3. **Claim 24** is objected to because of the following informalities: Line 2 appears to end abruptly with "substrate to be" In an effort to further prosecution, Examiner has taken the phrase to indicate the term "printed" as missing and reads the limitation as "roller is arranged so as to contact the surface of the substrate to be printed." Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

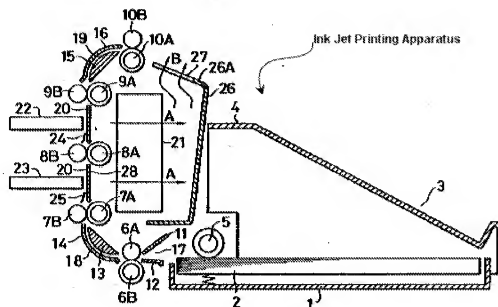
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

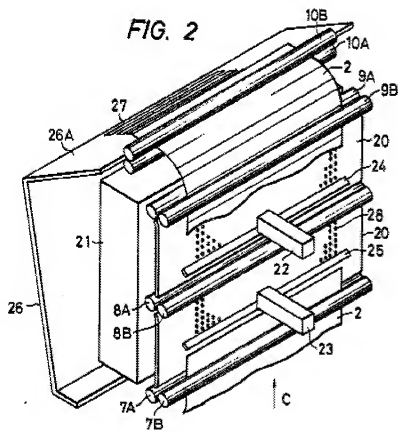
5. **Claims 1, 3-4, 6-7, 10, 23, & 16** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by **Koumura et al.** (US 4,463,361 A).

a. As related to independent **claim 1**, Koumura et al. teach an ink jet printing apparatus for printing on a substrate (Koumura et al. – Title; Abstract; and Figure 1, Reference #2 & Arrows, shown below), the printer comprising: a plurality of ink jet printheads for emitting ink towards a surface of the substrate wherein the printheads are adapted to be stationary while emitting ink (Koumura et al. – Detailed Description, Column 2, Lines 67-68 and Figures 1 & 2, Reference #22 & #23, both shown below); a plurality of rollers arranged to move the substrate relative to the printheads (Koumura et al. – Detailed Description, Column 2, Lines 60-61 and Figures 1 & 2, Reference #7A - #9B both shown below); and a pressure source wherein the pressure source is arranged to apply a negative gauge pressure [i.e. a suction] to the substrate to hold the substrate to the rollers (Koumura et al. – Detailed Description, Column 2, Lines 66-67; and Figures 1 & 2, Reference #21, #A & Arrows, both shown below).

**FIG. 1**



**FIG. 2**



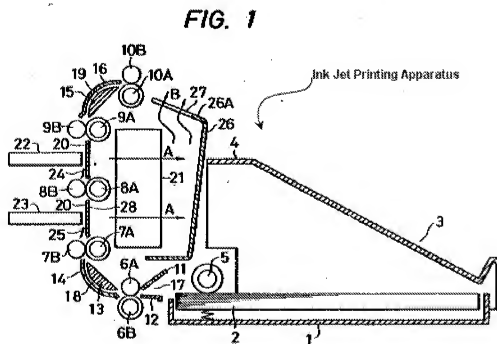
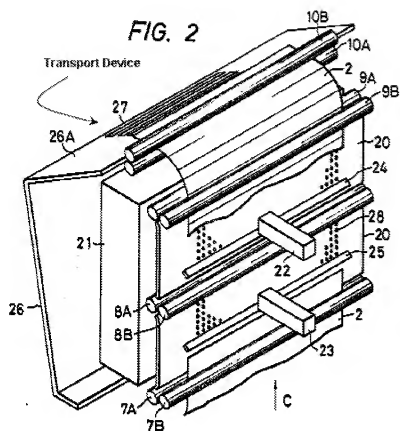
- b. As related to dependent **claim 3**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach the apparatus includes at least three rollers arranged to move the substrate relative to the printheads (Koumura et al. – Detailed Description, Column 2, Lines 60-61 and Figures 1 & 2, Reference #7A - #9B both shown above).
- c. As related to dependent **claim 4**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach the rollers are mounted substantially parallel to the adjacent rollers [i.e. rollers are parallel to adjacent rollers] (Koumura et al. – Detailed Description, Column 2, Lines 60-61 and Figure 1, Reference #7A, #8A, #9A - #7B, #8B, & #9B shown above).
- d. As related to dependent **claim 6**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach the negative gauge pressure [i.e. a suction] is applied to the substrate in a region between adjacent rollers (Koumura et al. – Detailed Description, Column 2, Lines 66-67 and Figure 1, Reference #7A, #8A, #9A, #A & Arrows, shown above).
- e. As related to dependent **claim 7**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach an element [i.e. suction plate] arranged between the rollers adjacent the substrate (Koumura et al. – Detailed Description, Column 2, Line 65 – Column 3, Line 11 and Figures 1, Reference #7A, #8A, #9A, & #20, shown above).
- f. As related to dependent **claim 10**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach a guide for guiding a leading edge of the

substrate (Koumura et al. – Detailed Description, Column 2, Line 65 – Column 3, Line 11 and Figure 1, Reference #24, #25, & #20, shown above).

g. As related to dependent **claim 14**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach the system is adapted to print a color image [i.e. red and/or black] (Koumura et al. – Detailed Description, Column 3, Lines 23-25 and Figure 1, Reference #22, & #23, shown above).

h. As related to dependent **claim 23**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach the rollers are substantially non-porous [i.e. the rollers are non-porous] (Koumura et al. – Detailed Description, Column 2, Lines 60-67 and Figure 1, Reference #7A, #8A, #9A, shown above).

i. As related to independent **claim 16**, Koumura et al. teach a transport device for moving a substrate past printheads in an ink jet printer (Koumura et al. – Title; Abstract; and Figures 2 & 1, Reference Arrows, shown below), the device comprising: a plurality of rollers arranged to move the substrate relative to the printheads (Koumura et al. – Detailed Description, Column 2, Lines 60-61 and Figures 1 & 2, Reference #7A - #9B both shown below) and a pressure source wherein the pressure source is arranged to apply a negative gauge pressure [i.e. a suction] to the substrate to hold the substrate to the rollers (Koumura et al. – Detailed Description, Column 2, Lines 66-67; and Figures 1 & 2, Reference #21, #A & Arrows, both shown below).





j. As related to independent **claim 17**, Koumura et al. teach a method of printing a substrate in an ink jet printer (Koumura et al. – Title; Abstract; Detailed Description, Column 3, Line 57 – Column 4, Line 35), comprising: a plurality of ink jet printheads (Koumura et al. – Detailed Description, Column 2, Lines 67-68 and Figures 1 & 2, Reference #22 & #23, both shown above), a plurality of rollers (Koumura et al. – Detailed Description, Column 2, Lines 60-61 and Figures 1 & 2, Reference #7A - #9B both shown above) and a pressure source wherein the substrate is moved on the rollers relative to the printheads while applying a negative gauge pressure [i.e. a suction] to the substrate to hold the substrate to the rollers (Koumura et al. – Detailed Description, Column 2, Lines 66-67; and Figures 1 & 2, Reference #21, #A & Arrows, both shown above).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

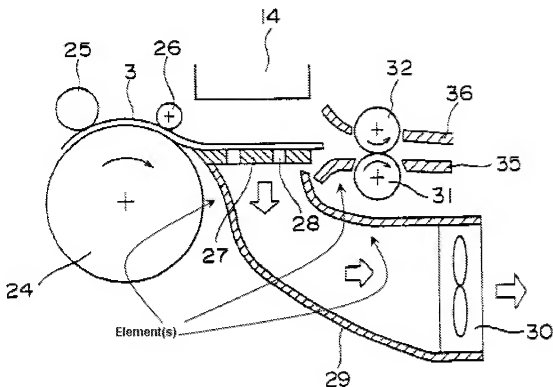
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. **Claims 2, 11 & 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Koumura et al.** (US 4,463,361 A).
  - a. As related to dependent **claim 2**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach the apparatus is adapted to print onto the surfaces of a plurality of discrete substrates [i.e. the guides are elastic so they can accommodate a variety of substrates no matter the thickness] (Koumura et al. – Detailed Description, Column 3, Lines 8-11). While the wording is not identical, it would have been obvious to one of ordinary skill in the art at the time of the invention to understand the device as taught by Koumura et al. would not have been limited to anything less than a "plurality of discrete substrates."
  - b. As related to dependent **claim 11**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach the substrate could comprise a variety of materials. While the wording is not identical, it would have been obvious to one of ordinary skill in the art at the time of the invention to understand the device as taught by Koumura et al. would have been capable of printing on a substrate comprising a substantially rigid material [i.e. card stock paper] and would not have been limited to anything less.
  - c. As related to dependent **claim 12**, Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach the substrate could comprise a variety of materials. While the wording is not identical, it would have been obvious to one of ordinary skill in the art at the time of the invention to understand the device as taught by

Koumura et al. would have been capable of printing on a substrate that when being printed, could be mounted on a deformable surface [i.e. normal paper, or cloth] and would not have been limited to anything less due in part to the function the vacuum, suction plate and rollers were intended to accomplish.

9. **Claims 8-9 & 21-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Koumura et al.** (US 4,463,361 A) and further in view of **Yasui et al.** (US 6,416,176 B1).

a. As related to dependent **claim 8**, while Koumura et al. teach the limitations of **claim 7** for the reasons above and continue to teach the element could be arranged to restrict airflow (innate characteristic of a suction plate), Koumura et al. *do not* specifically teach restricting airflow between rollers. *However*, Yasui et al. teach an ink-jet printing system with a transport mechanism that includes a plurality of rollers, a negative gauge pressure source, and an element which is arranged to restrict the airflow between the rollers (Yasui et al. - Title; Abstract; and Figure 2, Reference #14, #24, #31, #29, and Arrows, shown below).

FIG. 2



b. As related to dependent **claim 9**, while Koumura et al. teach the limitations of **claim 7** for the reasons above and continue to teach the element could be arranged to reduce deformation of the substrate (innate characteristic of the edges of the suction plate), Koumura et al. *do not* specifically teach reducing the deformation of the substrate between the rollers. *However*, Yasui et al. teach an ink-jet printing system with a transport mechanism that includes a plurality of rollers, a negative gauge pressure source, and an element which is arranged to reduce deformation of the substrate between the rollers (Yasui et al. - Title; Abstract; Summary, Column 3, Lines 2-42 and Figure 2, Reference #14, #24, #31, #29, and Arrows, shown above).

- c. As related to dependent **claim 21**, while Koumura et al. teach the limitations of **claim 7** for the reasons above Koumura et al. *do not* specifically teach the element arranged to be spaced apart from the substrate. *However*, Yasui et al. teach an ink-jet printing system with a transport mechanism that includes a plurality of rollers, a negative gauge pressure source, and an element which is arranged to be spaced apart from the substrate (Yasui et al. - Title; Abstract; Summary, Column 3, Lines 2-42 and Figure 2, Reference #3, #14, #24, #31, #29, and Arrows, shown above).
- d. As related to dependent **claim 22**, while Koumura et al. teach the limitations of **claim 7** for the reasons above Koumura et al. *do not* specifically teach the element is substantially non-porous. *However*, Yasui et al. teach an ink-jet printing system with a transport mechanism that includes a plurality of rollers, a negative gauge pressure source, and an element which is substantially non-porous [i.e. solid or completely non-porous] (Yasui et al. - Title; Abstract; Summary, Column 3, Lines 2-42 and Figure 2, Reference #14, #24, #31, #29, and Arrows, shown above).

Given the same field of endeavor, specifically an ink-jet printing system with a substrate transport mechanism, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the ink jet recording apparatus with a negative gauge pressure source and a plurality of rollers as taught by Koumura et al. with the ink jet recording apparatus with a negative gauge pressure source and a plurality of rollers with the additional arrangement of the element as taught by Yasui et al., in an effort to provide an ink jet printing system which is effective in maintaining the substrate in a flat condition with respect to the print head (Yasui et al. - Summary, Column 3, Lines 33-36).

10. **Claims 13 & 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over

**Koumura et al.** (US 4,463,361 A) and further in view of **Martin et al.** (US 5,255,020 A).

a. As related to dependent **claim 13**, while Koumura et al. teach the limitations of **claim 1** for the reasons above, and the practice of printing at extremely high speeds is well known and documented in the art, Koumura et al. *do not* specifically teach moving the substrate at a speed greater than 1m/s. *However*, Martin et al. teach a printing assembly which uses negative gauge pressure to maintain the substrate a set distance from the printing nozzles while moving the substrate at a speed greater than 1m/s [i.e. a plurality of meters per second] (Martin et al. – Title; Abstract; Specification, Column 1, Lines 25-30).

b. As related to dependent **claim 15**, while Koumura et al. teach the limitations of **claim 1** for the reasons above, and the practice of printing at high resolutions is well known and documented in the art, Koumura et al. *do not* specifically teach printing an image having a resolution of greater than 120 dip. *However*, Martin et al. teach a printing assembly which uses negative gauge pressure to maintain the substrate a set distance from the printing nozzles while printing an image having a resolution of greater than 120 dpi [i.e. 150 dpi] (Martin et al. – Title; Abstract; Specification, Column 1, Lines 30-32 and Column 3, Line 54).

Given the same field of endeavor, specifically an ink-jet printing system with a substrate transport mechanism, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the ink jet recording apparatus with a negative gauge pressure source and the desire to follow the practice in

the art at the time of the invention, that being to increase throughput and print resolution as taught by Koumura et al. with the ink jet recording apparatus with a negative gauge pressure source as taught by Martin et al., in an effort to control accurately the distance between the nozzles and the surface of the media and the emission of the ink drops as a function of the advance of the paper (Martin et al. – Specification, Column 1, Lines 33-40).

11. **Claim 24** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Koumura et al.** (US 4,463,361 A) and further in view of **Greive** (US 6,834,949 B2).

While Koumura et al. teach the limitations of **claim 1** for the reasons above and continue to teach no roller is contacting the surface of the substrate in the immediate area of printing (Koumura et al. – Figure 1, Reference #22, #23, #7B, #8B, #9B, shown previously), Koumura et al. *do not* specifically teach no roller is arranged so as to contact the surface of the substrate to be printed. *However*, Greive clearly teaches a device for holding a substrate, moving a substrate, and printing the substrate with a plurality of rollers and a negative gauge pressure applicator, with an arrangement such that no roller is arranged so as to contact the surface of the substrate to be printed (Greive - Title; Abstract; Description, Column 6, Lines 5-31; and Figure 1, Reference #1, #2, and Airflow Arrows, shown below). Given the same field of endeavor, specifically an ink-jet printing system with a negative pressure substrate transport mechanism, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the ink jet recording apparatus with a negative gauge pressure source as taught by Koumura et al. with the ink jet recording apparatus with a negative gauge pressure source as taught by Greive, in an effort to control accurately the distance

between the nozzles and the surface of the media (Grieve – Summary, Column 3, Lines 28-31) and prevent premature contact with newly recorded image, allowing further drying time and providing a higher quality image.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Teumer et al. (US 6,179,285 B1) teach a substrate transport assembly incorporating vacuum grooves, rollers, and substrate guides.

13. ***Examiner's Note:*** Examiner has cited particular Figures & Reference Numbers, Columns, Paragraphs and Line Numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Zimmermann whose telephone number is (571)270-3049. The examiner can normally be reached on Monday - Thursday, 7:00am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on 571-272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2861

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LUU MATTHEW/  
Supervisory Patent Examiner, Art Unit 2861

  
JPZ